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INFO-0078

AN OVERVIEW OF THE AECB'S STRATEGY FOR REGULATING RADIOACTIVE WASTE MANAGEMENT ACTIVITIES

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PAPER

July 28, 1982

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FOR REGULATING THE MANAGEMENT
OF RADIOACTIVE WASTES

SUMMARY

1. In regulating the management of radioactive wastes the goal of the Atomic Energy Control Board (AECB) is to ensure that people and the environment are protected during this and future generations.

   The system of dose limitations currently recommended by the International Commission on Radiological Protection (ICRP) provides a reasonable basis for establishing performance criteria and standards for radioactive contaminants, and will soon be incorporated in AECB Regulations.

   The hazards from these contaminants should be kept in perspective with hazards from non-radioactive wastes.

2. The subject, and the processes involved, are complex and a number of generic activities have been identified:

   - cooperation with other jurisdictions
   - identification and adoption of baselines for describing radioactive wastes
   - development of explicit criteria and requirements
   - publication of related regulatory documents
   - establishment of independent consultative processes with technical experts and the public
   - maintenance of awareness and reasonable compatibility with international activities

A number of specific categories of radioactive wastes which have been identified and some of the activities related to them are as follows:

3. High-Level Radioactive Waste

   - The current national plan for the disposal of nuclear fuel waste focuses on a program for isolation, at depth, in a hardrock geological repository.
   - A process for the regulatory review of this disposal concept is in place and a document has been distributed for discussion with other government agencies. The process involves a joint government (Canada and Ontario) public announcement, issuance of appropriate regulatory criteria, and public hearings, leading to a statement by the AECB on the technical acceptability or otherwise of the concept. Acceptance of the concept will indicate that, from the technical point of view the proponent can proceed with site selection.

. The AECB is the lead agency in this regulatory process and is thus responsible for

- the timely development of criteria and guidelines
- the technical evaluation of predictive modelling, sensitivity studies and methods of data acquisition
- public consultation, including the flow of information and appropriate participation in the decision-making process
- ensuring that there are appropriate mechanisms for interaction between the regulatory agencies which are involved. An Interdepartmental Review Committee on Concept Assessment (IRC) has been established and consists of representatives from the Ontario Ministry of the Environment, Environment Canada and the AECB.

4. Uranium Mines and Mill Tailings

. The technology is available for storage with adequate surveillance and maintenance of the tailings impoundment facilities. A more concerted approach to licensing and compliance is being developed including the review, documentation and publication of applicable regulatory requirements.

. Current emphasis is in relation to the long-term aspects:

- to ensure compliance with disposal objectives after termination of the operation and
- to investigate the extent of the problems and obtain assurance that adequate safety is maintained.

. The AECB will:

- continue to support national and international programs addressing long-term questions
- consider interim criteria for closure based on available technologies which are and which result in passive management systems
- contribute to advances in technology by supporting R & D programs and encouraging industry to investigate new options, e.g., backfilling, deep lake disposal, innovative surface impoundment methods, removal of contaminants
- complete documentation of available criteria and guidelines.

5. Other Radioactive Wastes

These include wastes from the nuclear fuel cycle other than fuel and tailings, from the utilisation of radioisotopes, from the processing of materials containing naturally occurring radionuclides and from clean-up programs. Although the storage of these wastes in many cases may be adequate, their disposal needs further consideration.

Some of these wastes also come within the jurisdiction of other agencies, however the AECB will

- resolve with other jurisdictions a working arrangement with regard to those radioactive wastes that do not completely fall within its licensing responsibility

- provide criteria and guidance on regional waste management systems including their administration and financing arrangements.

6. Radioactive Effluents from Nuclear Facilities

Very small amounts of radioactive gaseous and liquid effluents from nuclear facilities are dispersed in the environment under strictly controlled conditions established to minimize their impact and to maintain them within acceptable limits.

Further criteria and guidelines will be developed as required

- to ensure compliance with prevailing dose limits

- to determine design and operating targets that would reflect the ICRP principle that all doses be as low as reasonably achievable

- to assess and subsequently audit management and monitoring programs formulated by operators

7. Decommissioning and Decontamination of Nuclear Facilities

Since these activities generate radioactive wastes, criteria and guidelines are required

- to ensure that the wastes are minimized by the proper design of facilities, and

- to provide, in conjunction with others, maximum acceptable levels for decontamination and decommissioning.

APERÇU DE LA STRATÉGIE DE LA CCEA
POUR RÉGLEMENTER LA GESTION
DES DÉCHETS RADIOACTIFS

RÉSUMÉ

1. En réglementant la gestion des déchets radioactifs, la Commission de contrôle de l'énergie atomique (CCEA) a pour objectif d'assurer la protection des personnes et de l'environnement des générations actuelle et futures.

   Le système de limitation des doses actuellement recommandé par la Commission internationale de protection radiologique (CIPR) offre une base raisonnable pour l'établissement de critères et de normes de rendement qui seront bientôt inclus dans les règlements de la CCEA concernant la gestion des contaminants radioactifs.

   Les dangers que présentent ces contaminants devraient être envisagés par rapport à ceux des déchets non radioactifs.

2. Le sujet et les méthodes en cause sont complexes et un certain nombre d'activités génériques ont été identifiées:

   - la collaboration avec d'autres autorités
   - l'identification et l'adoption de caractéristiques fondamentales pour la description des déchets radioactifs
   - l'élaboration de critères et d'exigences explicites
   - la publication de documents de réglementation connexes
   - l'établissement de processus de consultation indépendants, grâce à la collaboration d'experts techniques et au public
   - maintien d'une connaissance des développements internationaux et d'une compatibilité raisonnable avec ceux-ci

Voici un résumé de certaines catégories de déchets radioactifs identifiées et des activités qui s'y rapportent.

3. Déchets radioactifs de haute activité

   - Le programme national actuel pour le stockage définitif du combustible nucléaire irradié mise sur son isolement dans les profondeurs de formations géologiques de roche dure.
   - Il existe actuellement un processus réglementaire pour l'examen de ce concept de stockage définitif qui a fait l'objet d'un document soumis à d'autres organismes gouvernementaux pour discussion. Ce processus comprend une déclaration publique conjointe des gouvernements (Canada et Ontario); la publication de critères de réglementation appropriés et la tenue d'audiences publiques, le tout visant à une déclaration de la CCEA sur la valeur technique du concept. L'acceptation du concept signifiera, du point de vue technique, que le demandeur pourrait procéder au choix d'un site.

. La CCEA est à la tête du processus de réglementation et, à ce titre, elle est responsable:

- de l'élaboration, dans les meilleurs délais, de critères et de lignes directrices

- de l'évaluation technique des modèles de prédiction, des études de sensibilité et des méthodes d'acquisition des données

- de la consultation publique, y compris l'obtention de renseignements et la participation appropriée au processus de prise de décisions

- de l'interaction entre les organismes de réglementation en cause. Un comité d'étude interministériel (CEI) a été mis sur pied pour l'évaluation du concept. Il regroupe des représentants du ministère de l'Environnement de l'Ontario, du ministère fédéral de l'Environnement et de la CCEA

4. Résidus du traitement du minerai d'uranium

. Les techniques actuelles d'entreposage des résidus font appel à une surveillance et une maintenance adéquates des installations de stockage. Une approche plus concertée de délivrance de permis et de contrôle de la conformité est en cours d'élaboration, notamment dans le domaine de l'étude, de la documentation et de la publication des exigences réglementaires applicables.

. L'accent est actuellement placé sur les aspects à long terme, en vue:

- d'assurer la réalisation des objectifs d'évacuation à la fin de l'opération, et

- d'étudier l'importance des problèmes éventuels et d'obtenir la certitude qu'un niveau de sécurité approprié sera maintenu.

. La CCEA:

- continuera d'appuyer les programmes nationaux et internationaux portant sur les questions à long terme

- formulera des critères provisoires de fermeture fondés sur les techniques disponibles qui représentent des systèmes passifs de gestion ou qui peuvent y mener

- contribuera à l'avancement de la technologie par ses programmes de recherche et de développement et encouragera l'industrie à étudier de nouvelles options, par exemple, le remblayage, le stockage définitif dans des lacs profonds, de nouvelles méthodes de stockage en surface, l'enlèvement des contaminants

- complétera la documentation des critères et des lignes directrices disponibles.

5. Autres déchets radioactifs

Cette rubrique comprend les déchets provenant du cycle du combustible nucléaire (autres que le combustible et les résidus d'uranium), de l'utilisation de radio-isotopes, du traitement de matières contenant des radionucléides naturels et, enfin, des programmes de décontamination. Bien que l'entreposage de ces déchets soit satisfaisant dans de nombreux cas, leur évacuation doit faire l'objet d'études plus détaillées.

Certains de ces déchets relèvent aussi de la compétence de certains autres organismes. La CCEA

- concluera, avec les autres autorités, des ententes concernant les déchets radioactifs qui ne relèvent pas entièrement de sa responsabilité pour la délivrance de permis

- fournira ses conseils et critères quant aux systèmes régionaux de gestion des déchets, y compris les ententes d'administration et de financement.

6. Effluents radioactifs provenant des installations nucléaires

Des quantités très faibles d'effluents radioactifs gazeux et liquides provenant des installations nucléaires sont dispersées dans l'environnement sous des conditions strictement régies, établies pour réduire leurs répercussions et pour les conserver en deça de limites acceptables.

D'autres critères et lignes directrices seront élaborées, au besoin, pour

- assurer le respect des doses limites en vigueur

- déterminer les objectifs de conception et de fonctionnement qui refléteront le principe de la CIPR voulant que toutes les doses soient aussi faibles qu'il soit raisonnablement possible d'atteindre

- évaluer et, par la suite, pour vérifier les programmes de gestion et de surveillance formulés par les exploitants.

7. Déclassement et décontamination des installations nucléaires

Comme ces activités produisent des déchets radioactifs, des critères et des lignes directrices sont requis pour

- assurer que les déchets sont réduits au minimum grâce à la conception appropriée des installations, et

- établir, de concert avec d'autres, les niveaux maximum acceptables en matière de décontamination et de déclassement.

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AN OVERVIEW OF THE STRATEGY OF THE AECB FOR REGULATING THE MANAGEMENT OF RADIOACTIVE WASTES

1. INTRODUCTION

The Atomic Energy Control Board (AECB) has primary responsibility for the regulation of radioactive waste management activities. In accordance with the Atomic Energy Control Act and Regulations and the criteria on which its regulatory requirements are based, the AECB uses a process which involves the assessment of licence applications and the determination of the compliance by the licensee with the conditions contained in the licence and with the Regulations. Guidance is provided to assist the proponent in satisfying the criteria and hence the regulatory requirements. In order for this process to be successful, it must be comprehensive, substantive and timely. To achieve this, the AECB has developed a strategy which identifies what is to be done, what decisions are necessary, and the time frame involved.

This document provides an overview of this strategy, outlining what the AECB has accomplished to date and what it intends to do in the future.

2. GENERAL CONSIDERATIONS

2.1 Regulatory jurisdiction over radioactive waste involves a number of federal and provincial government agencies with interests in occupational health and safety, public health and safety and the environment. In some cases, such as in the siting of nuclear facilities, municipal governments may also become involved.

Given this situation, the AECB has established working arrangements with other regulatory organizations to ensure coordination where interests overlap. Current arrangements involve inter-agency review groups that commence discussions sometimes well in advance of receiving an application from a prospective licensee.

The role of the AECB, as outlined in the Atomic Energy Control Act and Regulations, could be interpreted as covering the regulation of all undertakings involving radioactivity.

In practice, however, the AECB refrains from regulating situations where naturally-occurring radionuclides such as Uranium, Thorium and Radium are involved but are not the subject of the process or activity being considered.

2.2 Responsibility towards future generations is a significant philosophical consideration which affects the degree and extent of regulation of radioactive waste management.

The extent of such responsibility is a major aspect which the AECB factors into its standards and criteria. The predominant attitude in this regard is that future generations should not be subjected to any greater risk than would be acceptable to the current generation. The AECB has examined this subject of responsibility towards future generations, has funded an independent study, and is involved in further discourse both nationally and internationally, the latter particularly through the Nuclear Energy Agency of the Organization for Economic Cooperation and Development.

2.3 In the area of Radiation Protection, the AECB has traditionally used the principles and criteria of the International Commission on Radiological Protection (ICRP) as the basis for its own regulatory approach.

One of the major principles of the ICRP is that "all radiation exposures shall be kept as low as reasonably achievable, economic and social factors being taken into account", commonly referred to by the acronym ALARA.

The AECB is participating in national and international discussions on the interpretation of ALARA.

The AECB is also developing its own policy on the implementation of ALARA, the first step being the inclusion of the general principle in upcoming revisions to the AEC Regulations.

2.4 Radioactive waste should be viewed in perspective with other hazardous wastes.

The eventual objective is to obtain a balance in the emphasis and effort applied to radioactive waste management regulation compared to other hazardous wastes. Proper application of the ALARA principle would greatly enhance the attainment of this objective.

2.5 The definition of radioactive waste, its classification for management purposes and the designation of "de minimis" wastes which need not be regulated, are all closely linked.

The AECB has formulated a definition which states that radioactive waste is any material containing, or contaminated with, radionuclides in concentrations or amounts which would not allow the unrestricted use or release of the material.

Radioactive waste classification is necessary for the setting of appropriate regulatory criteria in a systematic manner. A classification system for disposal, according to toxicity and longevity, is being considered.

Several categories of de minimis wastes have been identified, all of which require consideration of concentration, quantity and types of radionuclides. Current regulatory decisions in this area are made on a case-by-case basis, but efforts are being directed towards establishing comprehensive criteria.

2.6 The Regulations, the criteria on which the regulations and other regulatory requirements are based and the guidelines for meeting these requirements are all critical to the regulatory process.

The AECB is currently modifying the existing Regulations in order to deal more effectively with a number of areas, including radiation protection, packaging and compliance, all of which are significant in regulating radioactive waste.

A number of documents also exist for regulating the storage and handling of wastes. The AECB has recently drafted criteria and guidelines related to the deep geological disposal of radioactive waste. Interim close-out criteria for uranium mine tailings have been proposed and are currently undergoing external review.

2.7 Siting of radioactive waste management facilities involves consideration of many factors.

Development of the technical considerations is underway, with the AECB as lead agency in a number of interagency working groups.

The AECB, in consultation with the appropriate federal and provincial agencies, is also involved in examining many non-technical aspects. The objective of these consultations is to recommend to governments what is reasonable in regard to the appropriate number of sites in the country, the proximity of the waste producer and the sites, the further use of existing sites (radioactive and non-radioactive), and right of access to and the regional acceptance of the sites.

As part of its regulatory document development process, the AECB provides for public participation in the development of the criteria and principles which will be applied to site acceptance. As well, the AECB participates in various public forums in which site acceptance principles are discussed.

2.8 Pathways analysis is the process used to predict the movement of materials with time from radioactive waste facilities through the environment. This process requires modelling, data-gathering and extensive computational capabilities. In order to perform its regulatory role, the AECB is currently enhancing its capability to comprehend and judge the output of this analysis through its own staff and outside advisers.

2.9 Input from outside the AECB is essential to a thorough and credible regulatory operation.

The AECB has contracts with individuals to provide expertise in addition to that of its own staff. It also has Advisory Committees which are utilized to consider some of the aspects of radioactive waste management. The AECB is also involved in international organizations (Nuclear Energy Agency and International Atomic Energy Agency) and bilaterally with regulatory agencies in the U.S.A. and U.K. in establishing internationally acceptable policies and principles of radioactive waste management.

2.10 Long-term responsibility for radioactive waste management poses certain problems when considering the inherent lack of permanency of human institutions.

As a result, there is a need to choose management methods which limit the time period during which there is reliance on human control. There is also a need to set aside resources for contingencies that may occur during the operating period of a disposal facility and to provide for surveillance during the predetermined period of institutional control.

These considerations are being included in the AECB's criteria for waste disposal facilities.

The AECB is also investigating various appropriate means by which the required resources could be set aside.

3. HIGH-LEVEL RADIOACTIVE WASTE - DEEP GEOLOGICAL DISPOSAL

The general plan for the disposal of Canada's high-level radioactive waste focuses on isolation, at depth, in a geological repository. Currently underway is the "concept assessment" phase of the repository program where a generic assessment is being done of the safety and environmental impact of a reference

repository. The generic study will deal with all aspects of the repository, from site selection, through construction and operation, to the post-closure period. Mathematical modelling of the repository and its surrounding geological media, to aid in determining their effectiveness in isolating the radioactive material from the environment, will be given principal consideration in the assessment.

The AECB, Environment Canada and the Ontario Ministry of the Environment are reviewing the concept for geologic disposal to determine whether it is adequate.

The AECB's responsibility is to ensure that the deep geological disposal facility will be sited, designed and constructed, operated and eventually closed in a manner that will provide the required protection for the worker and the public.

3.1 Criteria and Guidelines

The AECB will ensure the timely development of the criteria on which all aspects of the repository program, from concept assessment to closure, will be judged and approved.

Generic guidelines for the geological aspects of site selection have been developed and should be available for public comment in 1982. These guidelines relate specifically to the geological aspects that may influence the ability of the repository and the geosphere to contain and retard movement of the radioactive materials over long periods of time.

Guidelines for site selection for a high-level radioactive waste disposal facility should be available by the end of 1982. Guidelines for the preparation of a site evaluation report are also required and they should be available by the end of 1983.

The criteria and principles on which the site and subsequent phases of the repository program will be approved will include those presently available and generally applicable to radioactive waste management facilities, augmented by the criteria being established for evaluation of concept assessment.

3.2 Technical Evaluation

In its evaluation of "concept assessment", and prior to the program being allowed to progress to the site selection phase, the AECB will ensure that:

i) the methodology for predictive modelling can be or has been satisfactorily developed;

ii) the parameters used in the predictive modelling which will determine release and migration of radioactive materials from the vault to the environment can be both reliably determined and are representative of the reference design being investigated;

iii) sensitivity studies have been undertaken on these parameters so that acceptable values or ranges of values can be established for site evaluation and subsequent phases of the program;

iv) the technology for site investigation and selection has been developed

to an acceptable level; and

v) based on the above and the results of the predictive modelling exercise, adequate assurances are given that such a facility can be safely sited and operated and that the rates of releases of radioactive materials to the environment will be within established criteria.

3.3 Public Involvement

The AECB's responsibility to the public extends beyond physical health and safety. Public perception of the problems relating to the disposal of high-level radioactive waste must be based on adequate and accurate information. "Peace of mind" of responsible citizens is possible only if they are duly informed and involved in the decision-making relative to the development of technology that influences their well being.

It is the AECB's policy that the public be kept informed of developments and regulatory decisions regarding these developments. The AECB will ensure that the public has the opportunity to comment on criteria and guidelines prior to their finalization and that constructive comments are factored into final decisions.

A procedure has now been established to provide for public comment on all regulatory documents. Criteria and guidelines relating to the repository program will follow this procedure.

3.4 Interagency Review Committee

In keeping with its normal joint regulatory approach, the AECB has established an Interagency Review Committee on Concept Assessment (IRC) consisting of the Ontario Ministry of the Environment (OME), the federal Department of the Environment (DOE), and the AECB. The OME is responsible for the coordination of input to the IRC from other Ontario agencies.

4. URANIUM MINE AND MILL TAILINGS

The management of uranium mill tailings currently consists of storage on the surface near the mill site. However, many unanswered questions exist regarding the behaviour of uranium mill tailings in the long term.

4.1 Storage

Technology is available and in place today to ensure the safe impoundment of uranium mill tailings, provided these impoundments are afforded adequate surveillance and maintenance. The AECB must ensure that the tailings continue to be managed safely, taking into account the principle of ALARA.

4.2 Disposal

The AECB has maintained that its objectives for the disposal of radioactive wastes must apply equally well to uranium tailings, including a "walk-away" situation that does not depend on human intervention to ensure adequate isolation of the wastes from people and the environment. Existing practices of tailings management do not appear to be compatible with these objectives. The technology which is available to close existing operational and non-operational tailings impoundments safely still appears to require long-term surveillance,

including maintenance and restrictions on access and use of the areas. Investigation is required to identify both generic and site-specific options that could satisfy these objectives or at least optimize methodologies in tailings management to improve long-term isolation and safety assurances.

The AECB has conducted its own state-of-the-art review and is attempting to quantify long-term considerations.

Also, the AECB has given strong support to the implementation of a definitive, national investigation into the disposal of uranium tailings. A program has been initiated, coordinated by the Department of Energy, Mines and Resources, and the AECB will maintain involvement, in an advisory capacity, to promote effective progress towards satisfactory management schemes.

4.3 Tailings Management Options

The AECB is planning to put more emphasis on advancing the technology for long-term management of uranium tailings both through its own research and development and by encouraging industry to look for better technology. Options have been recognized that are not being given appropriate attention, including backfilling underground mined-out regions, deep-lake deposition, drying tailings, and removal of contaminants.

4.4 Criteria and Guidelines

Recognizing that the results of the national program on uranium tailings disposal may not be implemented for several years, the AECB is developing, as quickly as possible, criteria for the closure of uranium tailings areas, based on available technology, to serve the interim period. The criteria, basically performance and procedural criteria for closure, will give rise to a passive system that will perform safely in the long term while requiring only minimal surveillance, maintenance and land-use restrictions.

Interim criteria for the closure of uranium tailings areas have been drafted and were released for public comment in January, 1981. Technical discussions with other government agencies, the industry and worker groups were held during the spring of 1981. Input from these discussions and from the public at large will be factored into the final criteria.

The AECB has also conducted a study to identify the potential cost of implementing the close-out criteria.

Criteria and guidelines for site selection, design, construction and operation of uranium mill tailings facilities exist but are not well documented.

The AECB is currently re-evaluating its criteria for these aspects of tailings management. Criteria will be drafted on specific requirements and will be made available. These will individually complement a larger package of criteria dealing with uranium mine and mill wastes. The format for the criteria will be documented early in 1982 and the criteria should be finalized by the end of 1982.

The AECB will continue to participate and promote Canadian participation in international exercises to advance its knowledge of tailings management technology and regulation and to establish, where possible, standardized approaches and practices.

5. OTHER RADIOACTIVE WASTES

In addition to uranium mine tailings and gaseous and liquid effluents, other low level radioactive wastes are generated in the nuclear fuel cycle (e.g. contaminated work clothing), as are medium level wastes (e.g. ion exchange resins). The many uses of some radioisotopes, particularly in the medical field, result in other low level radioactive wastes being generated across the country. In various industrial activities, many materials are involved which contain naturally-occurring radionuclides, the latter unavoidably being concentrated either in the product or the wastes. "Clean-up" activities such as those which were carried out in Port Hope, Ontario, also contribute to the inventory of low level wastes. Storage of these wastes is currently adequate, but disposal needs further consideration.

5.1 Extent of Problem

The AECB must be in a position to regulate the disposal of those wastes which fall within its jurisdiction. To do this, the AECB has established the magnitude and distribution of these wastes country-wide.

The AECB has completed a study which documents the characteristics, locations, and current and projected quantities of these wastes on a national basis. This study is being updated as part of a larger federal government project.

It is also necessary for the AECB to clarify the extent of its responsibilities in this area, particularly related to situations where the radionuclides are incidental to the main operation. The latter has already been addressed in Section 2.1.

5.2 Facility Sites

The disposition of these wastes is such that consideration must be given, by the appropriate agencies (including the AECB), to an optimum distribution of waste disposal facilities country-wide, taking into account location of wastes, their magnitude and any transportation difficulties. The location of existing facilities, both uniquely designated for radioactive wastes or those currently accommodating only non-radioactive wastes, should also be taken into account.

5.3 Criteria

The AECB will be providing criteria for disposal of these wastes, in particular criteria for regional waste management facilities. Consideration will also be given to criteria for adapting existing facilities (both radioactive and non-radioactive) to handling these low and intermediate level radioactive wastes.

6. RADIOACTIVE EFFLUENTS FROM NUCLEAR FACILITIES

Under normal operating conditions, some liquid and gaseous wastes are released from nuclear facilities and are dispersed in the environment. To minimize the impact of the radionuclides contained in these effluents, their concentrations and release rates must be stringently controlled within acceptable limits.

6.1 Effluent Limits

Effluent limits are normally derived from regulatory dose limits for individual

members of the public and can be influenced by considerations of environmental quality as well as the capacity of the environment to receive radioactive effluents without serious detriment.

The AECB's Advisory Committee on Radiological Protection (ACRP) is currently considering collective dose limits for all nuclear facilities, which could also be used for deriving effluent limits. The ACRP is expected to make recommendations early in 1982. AECB staff is participating in Canadian Standards Association committees to formulate methodologies for deriving effluent limits, is preparing to draft the guidelines associated with these limits and is associated with efforts to determine environmental capacity and quality implications.

6.2 Design and Operating Targets

The application of ALARA to the control of radioactive effluents is normally implemented by the setting of design and operating targets, which are usually well below the derived effluent limits.

The AECB is currently drafting a statement on ALARA, producing guidelines for the application of ALARA (including social considerations) and guidelines for determining design and operating targets. Because of the timing of important ICRP and IAEA documents currently being developed, these guidelines will not be produced until 1983.

6.3 Effluent Management and Monitoring Programs

An effluent management program, including appropriate monitoring and data recording, is prepared by a facility operator. The AECB assesses the proposed program and, after approval and implementation, audits the effectiveness of the program.

The AECB will be providing guidance on performance standards for monitoring, and will be stipulating the criteria to be used for auditing.

The AECB is currently participating in a Canadian Standards Association committee which is addressing performance standards for monitoring.

7. DECOMMISSIONING AND DECONTAMINATION OF NUCLEAR FACILITIES

Decommissioning and decontamination of nuclear facilities will result in gaseous, liquid or solid radioactive wastes which could be substantial in volume. Consideration must be given to the options for decommissioning and the development of criteria which can be factored into new facility designs. The impact of the wastes must also be assessed.

The AECB will be developing, in consultation with other agencies, maximum acceptable levels for decontamination, as well as guidance on options for decommissioning. In its requirements and guidelines for waste management facilities, the AECB will include consideration of wastes arising from decommissioning and decontamination.

As part of the setting of "de minimis" levels (see sect. 2.5), the AECB is working on the maximum acceptable levels for decontamination.

8. CONCLUSION

Radioactive waste management is a dominant subject in the multitude of AECB regulatory activities. It is a complex subject, ranging from philosophical through sociological to technological considerations of a wide variety of materials, facilities and situations.

In order to regulate such a set of circumstances effectively, it is necessary to set out a strategy. The foregoing provides an overview of such a strategy, which in turn is used by the Divisions of the AECB staff as an outline for the development of their detailed plans of action.